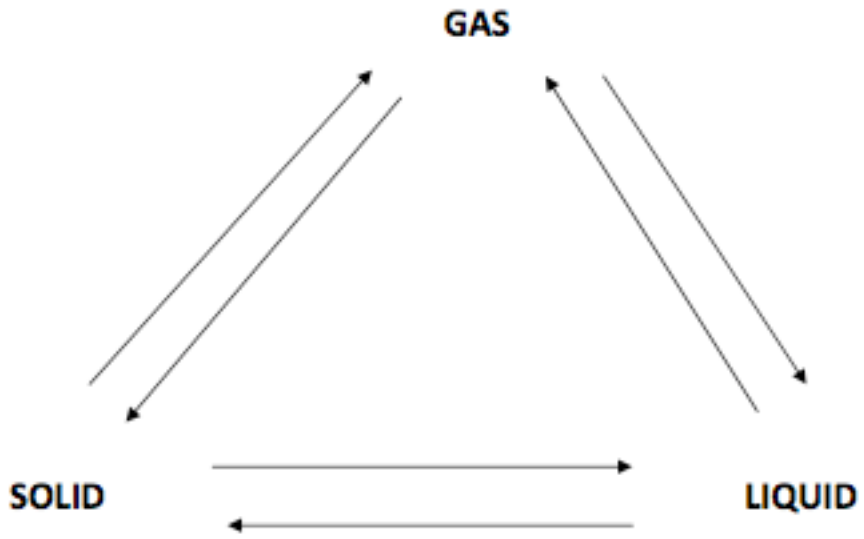
SCH 3U
J. Kropac

Matter

By definition, matter is anything that has _____ and _____ (e.g. a rock, water or the atmosphere). Matter is commonly found in 3 states:

_____ _____ _____

The Changes of State of Matter



Properties of the States of Matter

	Solid	Liquid	Gas
Shape			
Volume			
Compressibility			

Changes of state are an example of _____. A physical change is one that alters the physical _____ of matter but does not affect the _____. For example, water as ice, liquid water of gaseous water vapour has the constant composition H_2O (2 atoms of hydrogen + 1 atom of oxygen).

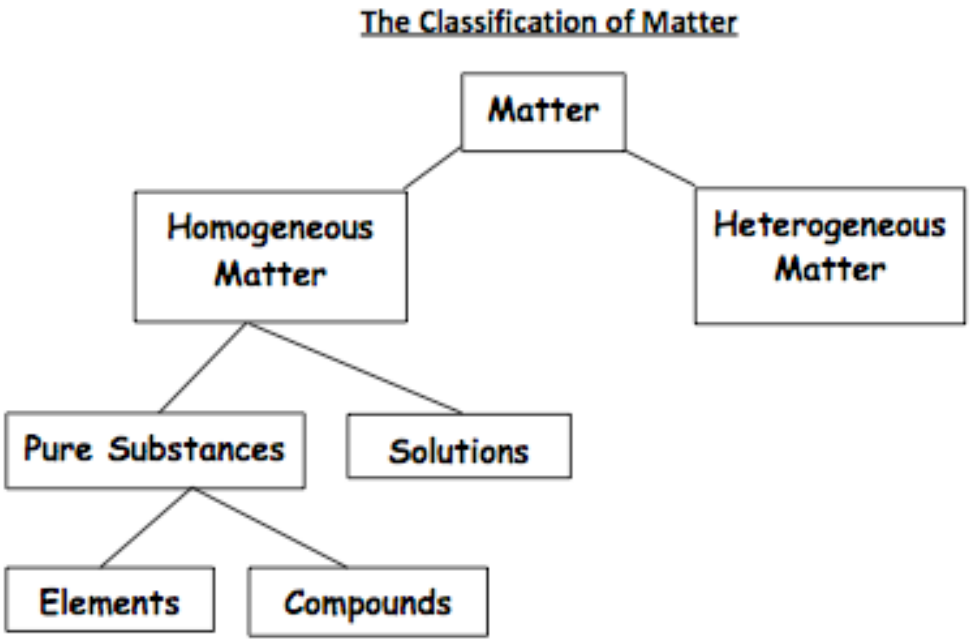
H_2O (s) ⟶ H_2O (l) ⟶ H_2O (g)

SCH 3U
J. Kropac

In contrast, a _____ is a change in a substance which converts it into _____ form(s) of matter, each with a different composition and unique properties.

$$H_2O\ (l) \longrightarrow H_2\ (g) + O_2\ (g)$$

The Classification of Matter



Matter: anything that has mass and takes up space
Mixture: a combination of 2 or more pure substances
Heterogenous Matter: consists of 2 or more pure substances. Also called mechanical mixtures. The mixture has 2 or more phases or parts.
Homogenous Matter: Has only one phase with the same properties throughout. May be a pure substance or a solution.
Solutions: Homogeneous mixtures consisting of 2 or more substances. Can consist of liquids, solids, or gases.
Compounds: Pure substances consisting of 2 or more elements bonded together. Can be decomposed onto simple substances by chemical reactions.

Elements and compounds have distinct and unique properties that can be used to identify them (eg. boiling point, melting point, density, colour, odour, hardness, ect.)

SCH 3U
J. Kropac

Physical and Chemical Changes

1) Physical Changes:

Examples:

2) Chemical Changes:

Examples

Evidence that a chemical change has occurred:

SCH 3U
J. Kropac

Properties of Substances

The characteristics by which one can identify a substance are called its properties. Properties can be divided into two categories. The _____ are those which can be determined without changing its composition such as _____, _____, _____. The _____ of a substance are those which can be observed only when the substance undergoes a change in composition such as _____, _____, ect.

Common Properties Include:

Appearance: Colour, Transparent/Translucent/Opaque, Lustre (Shiny/Dull), Shape (Crystalline/Amorphous).

Texture: Fine/Smooth/Rough/Course

Odor: Odors can often be compared to other things

Taste: Sour/Sweet/Bitter

State: Solid, Liquid, Gas

Density: Mass per unit volume

Hardness: Ranges from soft to hard

Fusibility: Whether or not a substance melts

Melting Point: Specific temperature at which is melts

Boiling Point: Specific temperature at which is boils

Solubility: Whether or not a substance dissolves in a liquid to form a clear solution.

Conductivity: Whether a substance conduct electricity

Combustibly: If a substance will burn (produce it's own heat/ light after the original substance is removed.

Reactivity: If a substance is unreactive or can undergo a characteristic reaction with some chemical.